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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,073	11/03/2004	Shu Kobayashi	2004-1382A	4410
513 7590 05/21/2007 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			EXAMINER SHIAO, REI TSANG	
			ART UNIT 1626	PAPER NUMBER
			MAIL DATE 05/21/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/507,073

Applicant(s)

KOBAYASHI, SHU

Examiner

Rei-tsang Shiao, Ph.D.

Art Unit

1626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on March 19, 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 10-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/09/04</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This application claims benefit of the foreign application: JAPAN 2002-065662 with a filing date 03/11/2002. However, an English-translated version of the instant certified foreign priority document has not been filed, the foreign priority has not been granted.
2. Claims 1-12 are pending in the application.

### ***Information Disclosure Statement***

3. Applicant's Information Disclosure Statement, filed on September 09, 2004 has been considered. Please refer to Applicant's copy of the 1449 submitted herein.

### ***Responses to Election/Restriction***

4. Applicant's election of Group I claims 1-9 in the reply filed on March 19, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-12 are pending in the application. The scope of the invention of the elected subject matter is as follows.

Claims 1-9, drawn to product, and their processes of making. Claims 10-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

The requirement is still deemed proper.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 is indefinite because it is recited as a compound claim and use the term "comprising" which is open-ended, see line 5. A compound claim cannot use open-ended language when defining the parameters of the compound, see M.P.E.P. 2111.03. By deleting "comprising" and inserting a term "consisting of", the rejection would be overcome.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

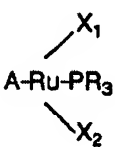
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are rejected under 35 U.S.C. 102(a) as being anticipated by Akiyama et al. Angew. Chem. Int. Ed, 2002, 41(14): 2602-2604.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Noels's CAS: 132:79002 or Jan et al. CAS: 133:350569.

Applicants claim a polymer-support arene-ruthenium complex having a formula,

i.e.,  , wherein the variable X1 or X2 represents halogen, the variable A represents an aromatic ring with a side chain, and the variable R<sub>3</sub> represents a hydrocarbon group, see claim 1.

Akiyama et al. disclose a polymer-support arene-ruthenium complex, i.e., compounds of 3a (i.e. = Ph) or 3b (i.e., R = cyclohexane), or the catalyst 5a, see page 2602-3, second column., lines 13-35, especially Scheme 1. Akiyama et al. complex clearly anticipate the instant claims, wherein the variable X1 or X2 represents halogen (i.e., Cl), the variable A represents an aromatic ring with a side chain (i.e., C<sub>6</sub>H<sub>5</sub>CO<sub>2</sub>Et), the variable R<sub>3</sub> represents a hydrocarbon group (i.e., phenyl or cyclohexane) and the polymer is polystyrene.

Noels discloses a number of polymer-support arene-ruthenium complexes, see RN: 52490-94-5, 145381-23-3, 167412-51-3, 169829-68-9, 253785-26-1 or 253785-27-2. Noels 's complex clearly anticipate the instant claims, wherein the variable X1 or X2 represents halogen (i.e., Cl, Br or I), the variable A represents an aromatic ring with a side chain (i.e., methyl-propyl-phenyl) , and the variable R<sub>3</sub> represents a hydrocarbon group (i.e., phenyl or cyclohexane).

Jan et al. a polymer-support arene-ruthenium complexes, see RN: 306308-16-7. Jan et al. complex clearly anticipate the instant claims, wherein the variable X1 or X2 represents halogen (i.e., Cl), the variable A represents an aromatic ring with a side chain (i.e., methyl-propyl-phenyl), and the variable R<sub>3</sub> represents a hydrocarbon group

Art Unit: 1626

(i.e., cyclopentyl). Dependent claims 2-9 are also rejected along with claim 1 under 35 U.S.C. 102(b) or 102(a).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 1626

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noels's EP 0970972.

Applicants claim a polymer-support arene-ruthenium complex having a formula,

i.e., 
$$\begin{array}{c} X_1 \\ \diagup \\ A-Ru-PR_3 \\ \diagdown \\ X_2 \end{array}$$
, wherein the variable X1 or X2 represents halogen atoms, the variable A represents an aromatic ring with a side chain, and the variable R<sub>3</sub> represents a hydrocarbon group, see claim 1. Dependent claims 2-9 provide further limitation, i.e., the organic polymer is a polystyrene.

**Determination of the scope and content of the prior art (MPEP §2141.01)**

Noels disclose a polymer-support arene-ruthenium complex comprising a polymer, ruthenium (II) metal, a anionic ligand and a compound of formula (I),

i.e., 
$$\begin{array}{c} R_1-P-R_3 \\ | \\ R_2 \end{array}$$
, wherein the polymer (i.e., polymerrizable aliphatic moners) is polystyrene, poly 4-hydroxystrene or poly p-methylstyrene, the variable R1-R3 represents substituted or unsubstituted C<sub>3</sub>-C<sub>12</sub> cycloalkyl, C<sub>5</sub>-C<sub>12</sub> aryl or C<sub>6</sub>-C<sub>14</sub> aralkyl, and the anionic ligand is F<sup>-</sup>, Cl<sup>-</sup>, Br<sup>-</sup> or BF<sub>4</sub><sup>-</sup>, see pages 3-5. A number of complexes have been specifically exemplified, see page 5, section [0045].

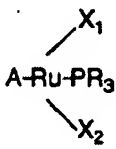
**Determination of the difference between the prior art and the claims (MPEP**

**§2141.02)**

The difference between the instant claims and Noels's is that the instant variable X1 or X2 represents halogen atoms, while Noels's represents halogen atoms or  $\text{BF}_4^-$ . Noels's complexes overlap with the instant invention.

**Finding of prima facie obviousness-rational and motivation (MPEP §2142-2143)**

One having ordinary skill in the art would find the instant claims 1-9 and prima facie obvious **because** one would be motivated to employ the complexes of Noels's to obtain the instant complex, comprising a polymer, a compound of formula,

i.e.,  , wherein the variable X1 or X2 represents halogen atoms, the variable A represents an aromatic ring with a side chain, and the variable R<sub>3</sub> represents a hydrocarbon group. Dependent claims 2-9 are also rejected along with claim 1 under 35 U.S.C. 103(a) .

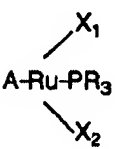
The motivation to obtain the claimed complexes derives from known Noels's complexes would possess similar activities (i.e., agents of catalyst) to that which is claimed in the reference.

9. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al. Angew. Chem. Int. Ed, 2002, 41(14): 2602-2604.



Art Unit: 1626

Applicants claim a polymer-support arene-ruthenium complex having a formula,

i.e.,  , wherein the variable X1 or X2 represents halogen atoms, the variable A represents an aromatic ring with a side chain, and the variable R<sub>3</sub> represents a hydrocarbon group, see claim 1. Dependent claims 2-9 provide further limitation, i.e., the organic polymer is a polystyrene.

**Determination of the scope and content of the prior art (MPEP §2141.01)**

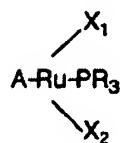
Akiyama et al. disclose a polymer-support arene-ruthenium complex, i.e., compounds of 3a (i.e., R = Ph) or 3b (i.e., R = cyclohexane), or the catalyst 5a, and the see page 2602-3, second column., lines 13-35, especially Scheme 1.

**Determination of the difference between the prior art and the claims (MPEP §2141.02)**

The difference between the instant claims and Akiyama et al. is that the instant variable X1 or X2 represents halogen atoms, while Akiyama et al. represents Cl. Akiyama et al. complexes overlap with the instant invention.

**Finding of prima facie obviousness-rational and motivation (MPEP §2142-2143)**

One having ordinary skill in the art would find the instant claims 1-9 and prima facie obvious **because** one would be motivated to employ the complexes or a catalyst of Akiyama et al. to obtain the instant complex, comprising a polymer, a

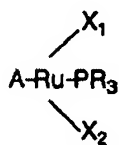


compound of formula, i.e., , wherein the variable X1 or X2 represents halogen atoms, the variable A represents an aromatic ring with a side chain, and the variable R<sub>3</sub> represents a hydrocarbon group. Dependent claims 2-9 are also rejected along with claim 1 under 35 U.S.C. 103(a) .

The motivation to obtain the claimed complexes derives from known Akiyama et al. complexes would possess similar activities (i.e., agents of catalyst) to that which is claimed in the reference.

10. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jan et al. CAS: 133:350569.

Applicants claim a polymer-support arene-ruthenium complex having a formula,



i.e., , wherein the variable X1 or X2 represents halogen atoms, the variable A represents an aromatic ring with a side chain, and the variable R<sub>3</sub> represents a hydrocarbon group, see claim 1. Dependent claims 2-9 provide further limitation, i.e., the organic polymer is a polystyrene.

**Determination of the scope and content of the prior art (MPEP §2141.01)**

Jan et al. disclose an arene-ruthenium complex, i.e., Ru Cl<sub>2</sub> (p-cymene) (ER<sub>2</sub>R') complex, wherein the variable E is P, R or R' is arylalkyl.

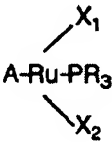
**Determination of the difference between the prior art and the claims (MPEP**

**§2141.02)**

The difference between the instant claims and Jan et al. is that the instant variable X1 or X2 represents halogen atoms, while Jan et al. represents Cl at the same position. Jan et al. complexes overlap with the instant invention.

**Finding of prima facie obviousness-rational and motivation (MPEP §2142-2143)**

One having ordinary skill in the art would find the instant claims 1-9 and prima facie obvious **because** one would be motivated to employ the complexes of Jan et al. to obtain the instant complex, comprising a polymer, a compound of

formula, i.e., , wherein the variable X1 or X2 represents halogen atoms, the variable A represents an aromatic ring with a side chain, and the variable R<sub>3</sub> represents a hydrocarbon group. Dependent claims 2-9 are also rejected along with claim 1 under 35 U.S.C. 103(a).

The motivation to obtain the claimed complexes derives from known Jan et al. complexes would possess similar activities (i.e., agents of catalyst) to that which is claimed in the reference.

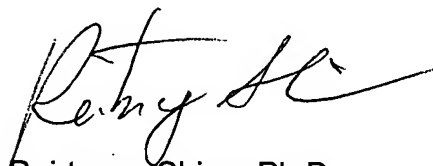
**Conclusion**

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Rei-tsang Shiao whose telephone number is (571) 272-0707. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph K. McKane can be reached on (571) 272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Rei-tsang Shiao', is written over a horizontal line.

Rei-tsang Shiao, Ph.D.  
Patent Examiner  
Art Unit 1626

May 14, 2007